PARTIAL TRANSLATION OF JAPANESE UNEXAMINED PATENT PUBLICATION (KOKAI) NO. 09-11818 [Reference 3]

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[claim 1]

A hood insulator wherein non-woven fabrics are laminated on both surfaces of a glass fiber mat with phenol resin attached hereto, characterized in that the hood insulator is integral molded by: using the non-woven fabrics having 10% intermediate stress at the temperature of 150°C of 5kg/5cm or less and having an areal weight of 50g/m^2 or less; and placing synthetic resin film to at least one side of the glass fiber mat.

[0004]

An object of the present invention is to provide with a hood insulator having the improved covering property, design, sound absorbency and molding processability.

[0019]

A hood insulator was provided by laminating (1) non-woven fabric, (2) synthetic resin film, (3) glass fiber mat and (1) non-woven fabric in this order to hot press mold in a molding machine which is heated to the temperature of 235°C and has concavity and convexity molds. The insulator had the good molding processability because of the absence of ripping or floating. Regarding the design, the insulator had the good covering property and appearance quality, since the glass fibers intervened inside were not visible from the surface of the insulator.

PATENT ABSTRACTS OF JAPAN

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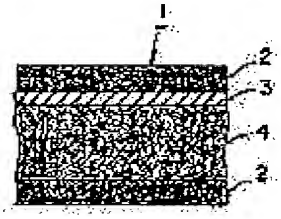
(54) HOOD INSULATOR

(57)Abstract:
PURPOSE: To improve a covering property and to enhance a designing property and improve sound absorbability and forming workability by applying a nonwoven fabric which is specified in intermediate stress as prescribed temperature and METUKE (weight/unit area) as the nonwoven fabric, and unitedly forming the nonwoven fabric while laying a synthetic resin film on one side of a glass fiber mat.
CONSTITUTION: A nonwoven fabric 2 which is not more than 5kg/5cm in 10% intermediate stress at temperature of 150° C and not more than 50g/m2 in METUKE is laminated on both the faces of a glass fiber mat having adhered a phenol resin. A synthetic resin film 3 formed of a low density polyethylene film colored in black by adding carbon pigment is interposed between the nonwoven fabric 2 and the glass fiber mat 4 and unitedly formed altogether. Thus the occurrence of breakage and floating can be prevented, and forming workability and a covering property are improved, and a designing property, outside appearance and sound absorbability can be made better.



* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1]In a hood insulator with which a nonwoven fabric was laminated by both sides of a glass fiber mat to which phenol resin was made to adhere, A hood insulator which 10% middle stress with a temperature of 150 ** uses in 5kg/5 cm or less, and eyes use [insulator] the following [50 g/m^2], makes a synthetic resin film placed at least between one side of a glass fiber mat as the above-mentioned nonwoven fabric, carries out integral moulding, and is characterized by things.
[Claim 2]The hood insulator according to claim 1 whose nonwoven fabric is a synthetic fiber continuous glass fiber nonwoven fabric.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]It is related with the hood insulator for cars. More particularly, it is related with the hood insulator for cars which is excellent in sound absorption nature, a moldability, design nature, etc.
[0002]
[Description of the Prior Art]Now, at least one side of the glass fiber mat to which binder resin, such as phenol resin, was made to adhere is made to laminate a nonwoven fabric, and the hood insulator which carries out integral moulding is on it. A hood insulator needs to make thin the composition fiber diameter which increases fiber volume of the nonwoven fabric of a surface layer, and to have precise composition etc., in order to improve covering nature.
[0003]There is a problem of extension between composition textiles, gap, etc. being difficult at the time of the fabricating operation by hot press although covering nature and design nature can be raised by increasing the composition fiber volume of a nonwoven fabric, and molding workability worsening, and becoming a high cost, and becoming an economic burden.
[0004]
[Problem(s) to be Solved by the Invention]The purpose of this invention is to provide the hood insulator in which the covering nature of a hood insulator has been improved, and design nature was improved, and sound absorption nature and molding workability were excellent.
[0005]
[Means for Solving the Problem]In a hood insulator with which a nonwoven fabric was laminated by both sides of a glass fiber mat to which this invention made phenol resin adhere, a hood insulator which 10% middle stress with a temperature of 150 ** uses in 5kg/5 cm or less, and eyes use [insulator] the following [50 g/m^2], makes a synthetic resin film placed at least between one side of a glass fiber mat as the above-mentioned nonwoven fabric, carries out integral moulding, and is characterized by things -- it comes out.
[0006]As a section is shown in drawing 1, a hood insulator of this invention laminates a nonwoven fabric (2) to both sides of a glass fiber mat (4), and comprises composition of having made a film (3) intervening between a nonwoven

fabric and a glass fiber mat. At least one field of a hood insulator of this invention is a laminated structure of a nonwoven fabric and a film.

[0007]0.5d-5d are desirable still more preferred, and average sizes of composition textiles of a nonwoven fabric used for this invention are 1d-3d. Especially if composition textiles of a nonwoven fabric used for this invention fill the purpose of molding workability, will not be restricted, but. For example, a staple fiber, continuous glass fiber, mixing, or lamination textiles which are single or comprise two or more sorts, such as bicomponent fibers, such as a polyethylene fiber, a polypropylene fiber, a polyamide fiber, polyester fiber, polyethylene polyester, and copolymerized polyester polyester, can be used. Since textiles which constitute a nonwoven fabric especially can make low 10% middle stress in 150 ** of molding temperature as they are synthetic fiber continuous glass fiber nonwoven fabrics, such as a crimped staple and a non-drawn fiber, they are preferred.

[0008]Although shape in particular of textiles is not limited, either, a round shape, an irregular shape cross, or a crimped staple is used. If middle stress in cooking temperature at the time of a fabricating operation is low, it will be easy to be extended by smaller power, and thermoforming can be easily carried out very much to formal uneven shape that it is easy to carry out size enlargement. 5kg/5 cm or less of 10% middle stress of a nonwoven fabric used for this invention is 3kg/5 cm or less preferably at temperature of 150-250 **. Not less than 30% of the degree of breaking extension is desirable, and is not less than 50% more preferably.

[0009]Eyes are below 50 g/m^2 and a nonwoven fabric used for this invention is 20 - 40 g/m^2 preferably. If eyes become more than 50 g/m^2, extension between composition textiles, gap, etc. will become it is difficult and insufficient [molding workability]. A manufacturing method of a nonwoven fabric used for this invention is obtained with single or two or more sorts of combination, such as the publicly known span bond method, the needle punch method, and the thermal bond method. A nonwoven fabric a synthetic continuous glass fiber nonwoven fabric or a synthetic continuous glass fiber nonwoven fabric which especially comprises partial thermo compression bonding carried out [a nonwoven fabric] needle punch processing is preferred.

[0010]A glass fiber mat used for this invention needs for a product obtained by the ability to perform thermoforming processing to have rigidity, and to excel in firmness, and to have fire retardancy, since it is the parts for cars. A glass fiber mat used for this invention is that to which phenol resin adhered, it is desirable still more preferred that it is 10 to 100 % of the weight, and coating weight is 20 to 80 % of the weight. if phenol resin has adhered -- cooking temperature at the time of thermoforming processing -- for example, it can come out, and both glass fibers can paste up and stiffen 150 ** - 250 **.

[0011]Rigidity and firmness which phenol resin coating weight runs short of adhesion and hardening, and makes the purpose in 10 or less % of the weight are not acquired. On the other hand, at 100 % of the weight or more, although rigidity and firmness are acquired enough, a problem arises to a phenol resin grant method, cost, etc. 200-1500g[/m] ^{2} is desirable still more preferred, and eyes of a glass fiber mat are 300 - 1000 g/m^2.

[0012]A glass fiber mat used for this invention may be mixed with other textiles as long as thermoforming nature, rigidity, firmness, etc. which are made into the purpose of this invention are acquired. A method of making phenol resin adhering to a glass fiber mat used for this invention impregnates with phenol resin liquid of a publicly known method, for example, a drainage system, or a solvent system, or is made by a spray method.
[0013]Although a synthetic resin film in particular used for this invention is not limited, it is single, or are two or more sorts of complex films, for example. [of polyethylene, polypropylene, polyamide, and polyester] It is desirable still more preferred that thickness is 10micro-100micro, and synthetic resin films used for this invention are 20micro-60micro.
[0014]A synthetic resin film used for this invention is made to intervene between a glass fiber mat and a nonwoven fabric, and prevents scattering of glass fiber, and skin irritation. A synthetic resin film used for this invention can also be pasted up with a nonwoven fabric or a glass fiber mat by a previous process. For example, they are an extrusion lamination, an adhesives lamination, a hot welding lamination, etc.
[0015]After a manufacturing method of a hood insulator of this invention makes the above-mentioned material laminate, it heats and carries out heat pressing press forming of the concavo-convex metallic mold to temperature of 150 ** - 250 ** several tens of second - minutes, and obtains the target shape. In order that a nonwoven fabric and a synthetic resin film which are used for this invention may raise appearance grace of a nonwoven fabric which forms a surface layer, it is preferred to be colored similar colors and it is excellent in covering nature and design nature.
[0016]It excels in covering nature, such as a hood insulator of this invention not having the CHIKUCHIKU nature of CHIKUCHIKU [glass fiber / a hand / touch and] etc., and a glass fiber mat being transparent in part from the surface, and being hard to be visible etc. Since a specific nonwoven fabric forms a surface layer, a hood insulator of this invention can have good covering nature, and it can be excellent in design nature, and it can change enough at the time of a fabricating operation by hot press.
[0017]
[Example]Hereafter, an example explains this invention concretely. The measuring method of physical properties went as follows.
(1) According to the tensile strength of 10% middle stress JIS-L-1906 (1994) of 150 **, and the measuring method of a pace of expansion, stress when ambient temperature is extended 10% at 150 ** shows.
[0018]
[Example 1]
In eyes, 30 g/m^2 and an average fiber diameter a nonwoven fabric ** 1.8 deniers, The processed goods which middle stress added 3.2 kg/5 cm, and carbon paints 150 ** 10%, and carried out needle punch of 80 times [/cm] ^{2} for the polyester filament nonwoven fabric whose partial thermo-compression-bonding rate which carried out black coloring is 12% were used.

** The low density polyethylene film which thickness added 25 micro and carbon paints and carried out black coloring was used for the synthetic resin film.
** The 25-mm-thick thing whose eyes to which phenol resin was made to adhere 30% of the weight are 650g / m^2 was used for the glass fiber mat.
[0019]** With the making machine with which it piled up in order of the nonwoven fabric, ** synthetic resin film, ** glass fiber mat, and ** nonwoven fabric, and the concavo-convex metallic mold was installed and which was heated by the temperature of 235 **, heat pressing press forming was carried out and the hood insulator was obtained. It was torn, and was not generated by the float etc. but molding workability was good. Design nature could not have from the surface the seen glass fiber made to be placed between inside, and covering nature and its appearance grace were good.
[0020]Sound absorption nature was effective and especially its high frequency region was good. As mentioned above, the result with which the hood insulator for cars of this invention is satisfied of the purposes, such as molding workability, design nature, and sound absorption nature, enough was obtained.
[0021]
[Comparative example 1] ** The polyester filament nonwoven fabric whose eyes are 25% of the partial thermo-compression-bonding rates whose 10% middle stress 70 g/m^2 and whose average fiber diameters are 1.8 deniers and 150 ** is 8.5 kg/5 cm was used for the nonwoven fabric.
** The thing to which eyes made phenol resin 650 g/m^2 and whose thickness are 25 mm adhere 30% of the weight was used for the glass fiber mat.
[0022]** It piled up with the nonwoven fabric, ** glass fiber mat, and ** nonwoven fabric, and heat pressing press forming was carried out like Example 1. The flattery nature of molding workability to the concavo-convex metallic mold was bad, the portion which floated arose, and the target shape was not obtained. Although the covering nature that design nature can hardly have the seen glass fiber made to be placed between inside was good, the result which shape satisfies bad (a moldability is bad) was not obtained.
[0023]As for sound absorption nature, a good result was not obtained as compared with Example 1. As mentioned above, molding workability is insufficient and it became scarce at design nature.
[0024]
[Effect of the Invention]As compared with the conventional thing, the hood insulator for cars of this invention is excellent in a moldability and surface design nature, and excellent in sound absorption nature. Therefore, it can be conveniently used as sound-absorbing materials, such as an engine room for cars, and the bonnet reverse side, and thermal insulation.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]The sectional view showing this invention hood insulator typically
[Description of Notations]
1 Hood insulator
2 Nonwoven fabric
3 Synthetic resin film
4 Glass fiber mat

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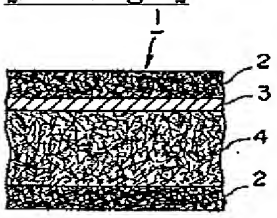
* NOTICES *

DRAWINGS

[Drawing 1]



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